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This is the story of a colony of New England butterflies. I commend this colony to the protection of all good citizens of the State of New Hampshire.

THE GAME FALCONS OF NEW ENGLAND: THE GOSHAWK.

BY W. WOOD, M. D.

ALTHOUGH this bird (*Astur atricapillus*) has not the characteristic markings of the true falcon, yet it can be trained to capture game. It was considered by Audubon, Sabine, and others to be the same as the European goshawk, which was so highly prized for sporting. Says Wilson, "If this be not the celebrated goshawk formerly so much esteemed in falconry, it is very closely allied to it." The poet Chaucer in alluding to it says, —

"Riding on hawking by the river,
With grey goshawk in hand."

Falconry and hawking, as defined by our lexicographers, are synonymous, but formerly birds of sport were divided into two classes, those of falconry and those of hawking. This bird came under the latter class. Mr. Pennant informs us that "the goshawk is used by the Emperor of China in his sporting excursions, and is considered the best of all hawks for falconry." The same writer further says that he "examined a specimen from America which was superior in size to the European." Whether the American and the European are identical I am unable to say; but many of our ornithologists at the present time consider them specifically distinct. Until quite recently, the tendency of ornithologists has been to make as many new species out of one bird as possible. Every change of locality necessitating a different construction of nest, and every slight change in color, arising from climacteric causes, has been seized upon to create new species. Happily for science there is now a reaction taking place among our best ornithologists. Says Professor Baird, "I take more pains now to subordinate forms once considered specific, than I do to establish them as such." It is not impossible or even improbable that our goshawk may yet be considered identical with the European species, and our peregrine falcon with its European congener. The goshawk is the handsomest of all our rapacious birds, and is so beautifully marked as to be easily distinguished from all our hawks. It is not very common in any part

of the United States, but Cassin informs us that "it is apparently more abundant in Northwestern America than in any other portion of the United States." His opinion was based upon the fact of six specimens being captured by the Pacific Railroad survey parties in Washington Territory and Shoal Water Bay. It may have been abundant that season and not seen there again for many years. Professor Verrill says that "it is common in Maine, and breeds there." Mr. G. A. Boardman, of Maine, says, "It is the boldest and most common of our winter hawks."

Some winters it is abundant in Connecticut, and the most common of our hawks, and then for years not a single specimen is seen. The first specimen which I obtained in East Windsor was in the winter of 1849-50. He was caught in a trap and brought to me alive. I gave him his liberty in a room eight feet by twelve feet, with a good supply of food, which he utterly refused to touch until the thirteenth day, when he devoured an entire hen, and died the next day, a victim to his voraciousness. The next that I received were two specimens in the winter of 1859-60. Nuttall speaks of its being very rare in Massachusetts; yet in 1859-60 Hon. C. L. Flint, of that State, received twenty specimens. It did not visit us again until the winter of 1867-68. That season I mounted five specimens and sent away quite a number for exchanges. I probably received some twelve or fifteen during the winter. In the winter of 1868-69 I received nine, and in 1869-70 two specimens. Since 1870 none have been taken or seen in this section, and it may not visit us again for another decade.

The goshawk does not usually soar high, like the longer-winged hawks, nor dart upon its prey by a direct descent, as do the true falcons, but by a side glance. It is restless, seldom alighting but for a moment, except to devour its quarry, and then it stands almost erect. Its flight is so rapid that it can easily overtake the swift pigeon on the wing. Audubon relates the following fact that he was an eye-witness to: "While traveling along the Ohio I observed a goshawk give chase to a large flock of crow-blackbirds then crossing the river. The hawk approached them with the swiftness of an arrow, when the blackbirds rushed together so closely that the flock looked like a dusky ball passing through the air. On reaching the mass, he with the greatest ease seized one, then another, and another, giving each a squeeze with his talons and suffering it to drop upon the water. In this manner he had procured four or five before the poor birds reached

the woods, into which they instantly plunged, when he gave up the chase, swept over the water in graceful curves, and picked up the fruits of his industry, carrying each bird singly to the shore."

The goshawk is the most daring and venturesome of any of our diurnal birds of prey. A farmer who resides a few miles from my office, wishing to perpetuate the old New England custom of having a chicken pie for Thanksgiving dinner, caught some fowls, took them to a log, severed the neck of one, and threw it down beside him. In an instant a goshawk seized the struggling fowl, and, flying off some ten rods, alighted and commenced devouring his prey. The boldness of the attack so astonished the farmer that he looked on with blank amazement. Recovering from his surprise, he hastened into the house and brought out his gun, which secured him both the hawk and the fowl. Another instance of still greater daring occurred near East Windsor Hill, Conn. A goshawk flew after a fowl near a dwelling-house; the door being open, the hen flew inside; the hawk followed, and seized her in the room occupied by an old gentleman and his daughter. The old man hastened to the rescue, and struck the hawk with a cane before it released its grasp. The daughter caught the hawk as it attempted to fly out of the door, and killed it.

When looking for prey it skims along near the surface of the ground with great velocity, and catches its game so quickly and easily as scarcely to be seen by the looker-on. The female is nearly one third larger than the male, and the young measures considerably more than the adult bird. I have specimens of the goshawk of all ages from the young to the adult, but am not aware that it is known when this bird arrives at adult plumage. I have kept the young in confinement until one year old without its showing the least tinge of gray or slate-color. No one but an ornithologist would ever suspect that the young and the adult belonged to the same species.

With regard to the nest of this bird, says Audubon, "The goshawk is of rare occurrence in most parts of the United States, and the districts of North America to which it usually resorts to breed are as yet unknown. Some nest within the Union, others in the British Provinces of New Brunswick and Nova Scotia, but the greater part seem to proceed farther north." The nest is said to be quite large and flat, and placed on the high branches of a tree, near the trunk, and is composed of dead twigs and coarse grass, lined with fibrous strips of plants, and sometimes with a few feathers. The goshawk lays from three to four eggs, usually

of a dull bluish-white color, and slightly spotted with faint brown blotches. One of the eggs in my collection is of a dusky white color, slightly tinged with dull blue, with oblong blotches of greenish-blue, and quite granulated. The measurements of two taken from different localities are as follows: long diameter $2\frac{2}{10}$ inches, short diameter $1\frac{7}{10}$; the second one, $2\frac{1}{8}$ inches by $1\frac{5}{8}$ inches. These measurements are somewhat less, and the egg was less spherical, than the one described by Dr. Brewer in his *North American Oölogy*. After thirty years' observation and experience in ornithological and oölogical researches, I am satisfied that it is not wise to place too much reliance upon the measurements or number of eggs found in a nest. This is particularly the case with our rapacious birds. Take for instance the great horned owl. Audubon says that it lays from three to six eggs; another collector says it always lays two eggs. While this may seem inexplicable to some, it admits of a very easy solution. A pair of these birds will occupy the same piece of woods for years if not molested, and the collector who finds their nest will invariably find two eggs. I have found two, three, four, and five eggs in a nest of this bird in different localities. The old bird lays two eggs, while the younger bird lays the larger number and the smallest eggs. I have never seen these facts in print, and am not aware that they are known to oölogists, but they are based upon my observations and that of my collectors. They explain many seeming discrepancies, and for this reason I have digressed somewhat from my subject in order to give what I consider important facts to the oölogist, as this closes my series of articles on the game falcons of New England.

THE ORIGIN AND DEVELOPMENT OF MUSEUMS.¹

BY DR. H. A. HAGEN.

THE second part of the seventeenth century is remarkable for the formation of academies in nearly every great city, and some, principally in Italy, were founded even a century before. The first one, the *Accademia Secretorum Naturæ*, founded in 1560 in Rome, was soon suppressed by the popes as being dangerous. Of those founded in the seventeenth century, some were more successful, and the most prominent are still vigorous, as, for instance, the Royal Society in London, the Leopoldine Academy in

¹ Concluded from page 89.